U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Environmental Management Cleanup Program Performance Measures for Fiscal Year 2018

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Strategic & Legacy Management Committee

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Purpose

- **Fulfill a Strategic & Legacy Management (S&LM) Committee Work Plan requirement to periodically provide Environmental Management (EM) performance updates.**

  - Review Fiscal Year 2018 actual performance results

SRS Cleanup Program - Background

- The EM Cleanup Program for the SRS started in the 1990's.
- Performance Measures have been developed to track progress towards end state targets.

SRS Cleanup Program – Major Areas

Radioactive Liquid Waste	**Solid Waste**	**Nuclear Materials**	**Soil, Water & Facilities**
Insoluble Waste (Sludge)	Transuranic (TRU) Waste	Nuclear Materials Disposition	Waste Site Remediation
Soluble Waste (Salt)	Mixed & Low Level Waste	Spent Nuclear Fuel Receipt, Storage & Disposition	Facilities Deactivation & Decommissioning
Tank Closures			

" How did we do in FY 2018 ? "

FY18 Challenges

- LW System-wide outage
- Late approval of the Budget impacted programs ability to implement all scope intended in FY18

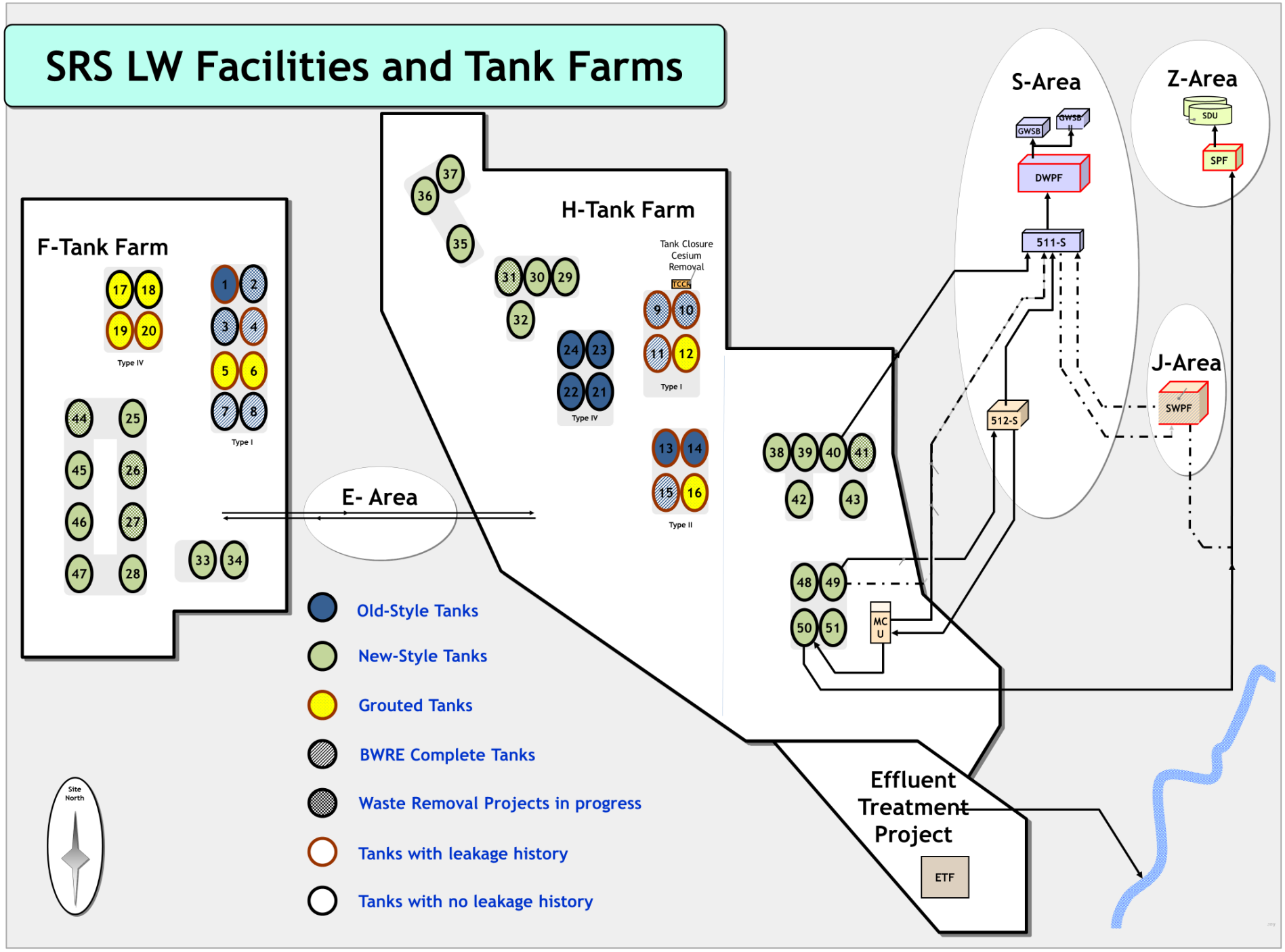
Highlights of FY 18 SRS Cleanup Program

- Continued recovery of uranium from dissolution of Foreign & Domestic Research Reactor fuel in H-Canyon (12 bundles in FY18 with a total of 212 bundles out of the 1000 authorized and 15 HFIR Cores out of the 200 cores authorized.)
- Continued to prepare plutonium for disposition
- Continued receipt, safe storage and shipment of Nuclear Materials, including Spent Nuclear Fuel, and receipt of the Canadian Target Residue Materials
- Continued receipt and disposition of Nuclear Materials, including Spent Nuclear Fuel in H-Canyon
- In Area Completion, great progress was on the 488-1D Basin - the last basin of the 4 facilities to be remediated as part of the D Area Ash Project

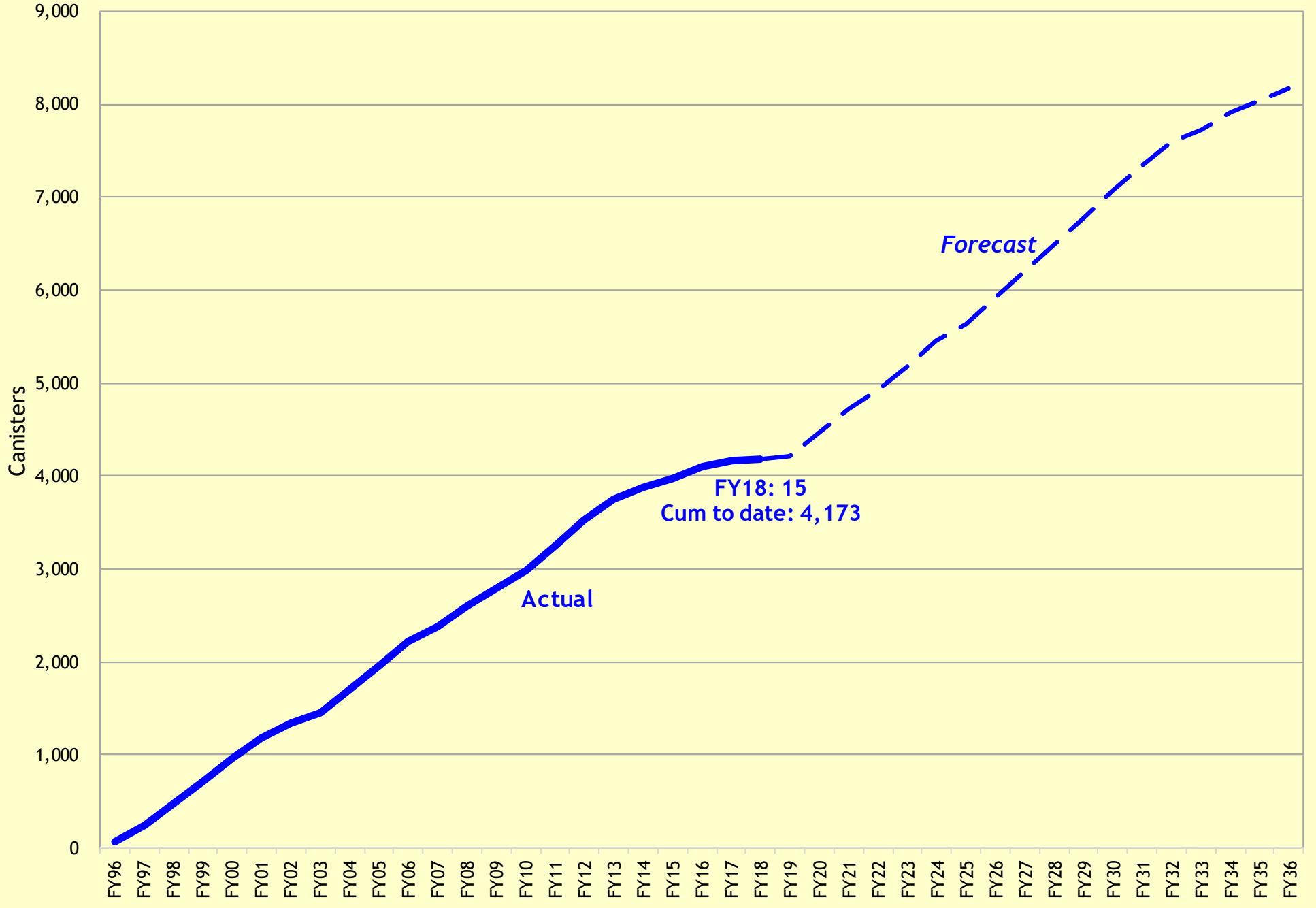
Highlights of FY 18 SRS Cleanup Program (Continued)

- Successfully replaced the failed Melter#2 with Melter #3 in the Defense Waste Processing Facility (DWPF). Poured 15 canisters and leak checked 13 canisters
- Successfully completed the initial tie-ins of SWPF to the Liquid Waste System and made significant progress in the required LW facilities modifications in preparation for SWPF operations startup in 2019.
- Modular Caustic Side Solvent Extraction Unit (MCU) processed 141,207 gallons of salt solution in FY18 after ending the melter replacement and SWPF tie-in outage.
- Saltstone processed 276,914 gallons in FY18. The first radioactive process run to Saltstone Disposal Unit 6 occurred on August 16, 2018 (116,000 gallons resulting in 206,000 gallons of grout).
- In Glass Waste Storage Building 1, there were 300 positions modified and 314 canisters double stacked.
- The 3H Evaporator repair is complete and restarted operations in July producing for the year 318,000 gallons of space gain. The weep site of salt is stable and no waste accumulation has been detected on the evaporator enclosure floor. Procurement of new evaporator pot and storage box were initiated as contingency.
- Installation of all TCCR unit modules and 95% of setup testing was completed in FY18. Balance of Plant field activities continued on schedule. Work on Tank 10 continued and Safety Analysis work was completed. Salt dissolution in Tank 10 is forecast to start by the end of November and the technology demonstration is planned to begin processing real waste in January.
- Excavation for the Saltstone Disposal Unit 7 foundation and construction of lower mud mat were completed. Contract for cell construction was awarded to DN Tanks. US Fusion has covered over 40% of the lower mud mat with the geosynthetic clay liner and high-density polyethylene (HDPE).

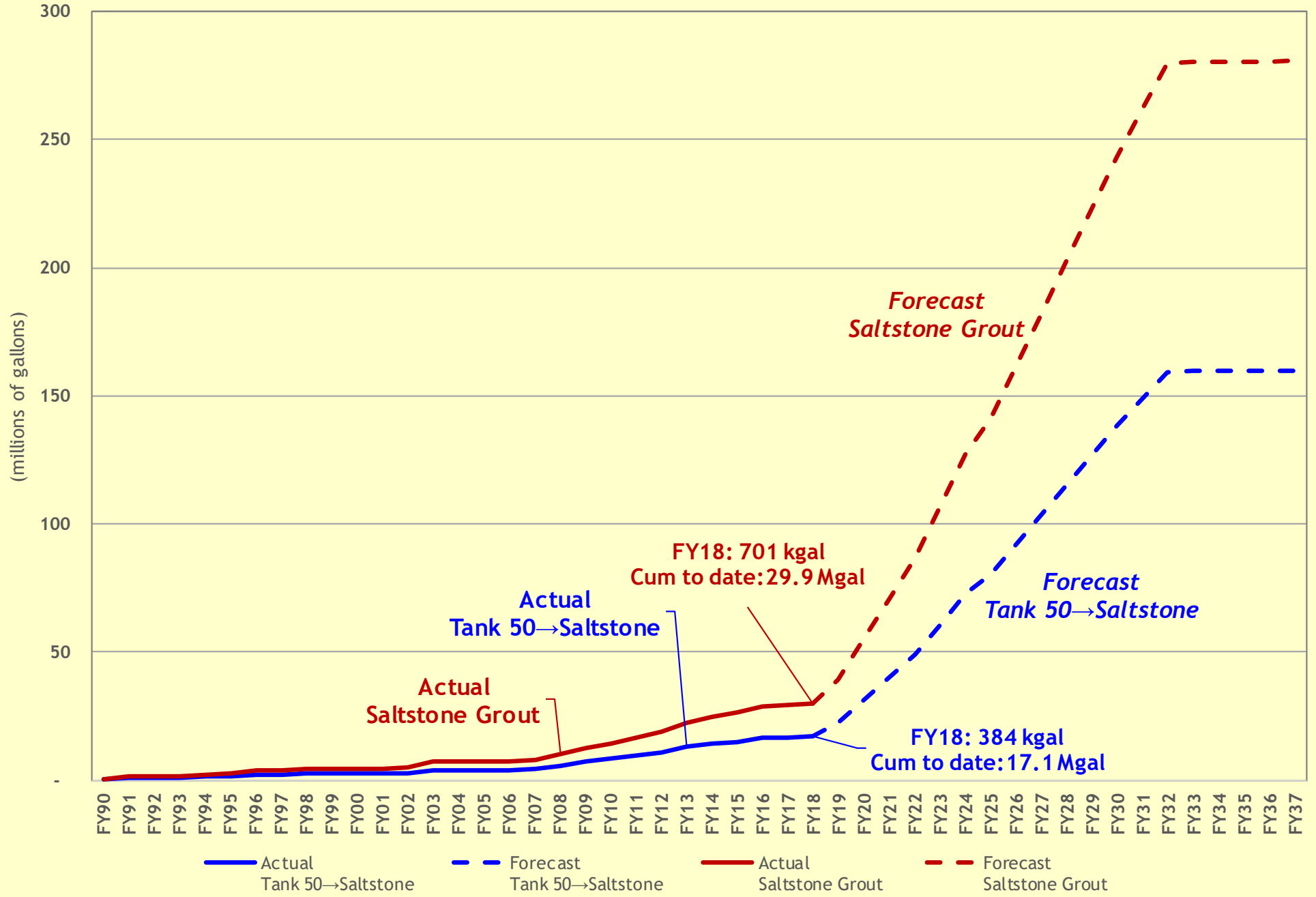
SRS LW Facilities and Tank Farms



SRS DWPF Canister Production



SRS Saltstone Production



Solid Waste Disposal: Mixed & Low Level Waste

Mixed Waste Shipment to Utah

Low Level Waste (LLW) New Trench - On Site

Performance Measure	Unit of Measure	Actual FY17	Target FY18	Actuals FY18	Cum To Date	End State	% Compl.
M&LL-Legacy (Prior to April 2008)	**Cubic Meters**	**-**	**-**	**-**	**103,171**	**103,171**	**100%**
M&LL-Newly Generated	**Cubic Meters**	**Met**	**< 400***	**Met**	**< 400**	**< 400**	**Ongoing**

* Accumulation of M&LL not to exceed 400 Cu Meters at anytime

TRU Waste

- SRS Generated TRU Waste
- Packaged to WIPP Requirements
- Perform WIPP Characterization
- Meets WIPP Waste Acceptance Criteria
- Ship to WIPP for Disposal

TRU Waste

- Generate approx. 30 cubic meters per year
- FY18: Approx. 720 cubic meters in storage
- Meeting new WIPP waste acceptance criteria
- Shipments resumed in FY17

TRU Waste – Shipments to WIPP

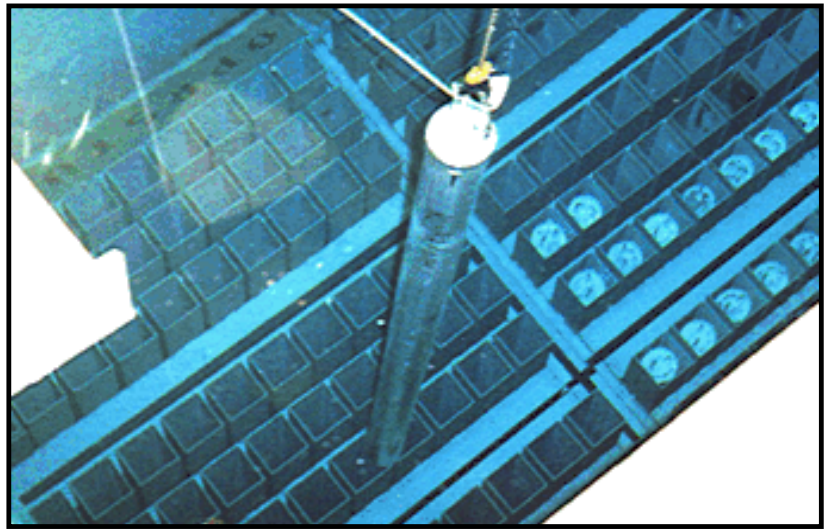
- SRS waste streams included in National TRU Program prioritization
- Current Focus: SLB2 shipments (7)
- FY18 Shipments: 1
- FY17 Shipments: 9

Performance Measure	Unit of Measure	Actual FY17	Target FY18	Actual FY18	Cum To Date	End State	% Complete
TRU – Legacy Shipped (in storage Feb 2014)	Cubic Meters	55	0	9	10,686	11,323	94%
TRU – Newly Generated Shipped	Cubic Meters	0	0*	0	84	TBD	Ongoing

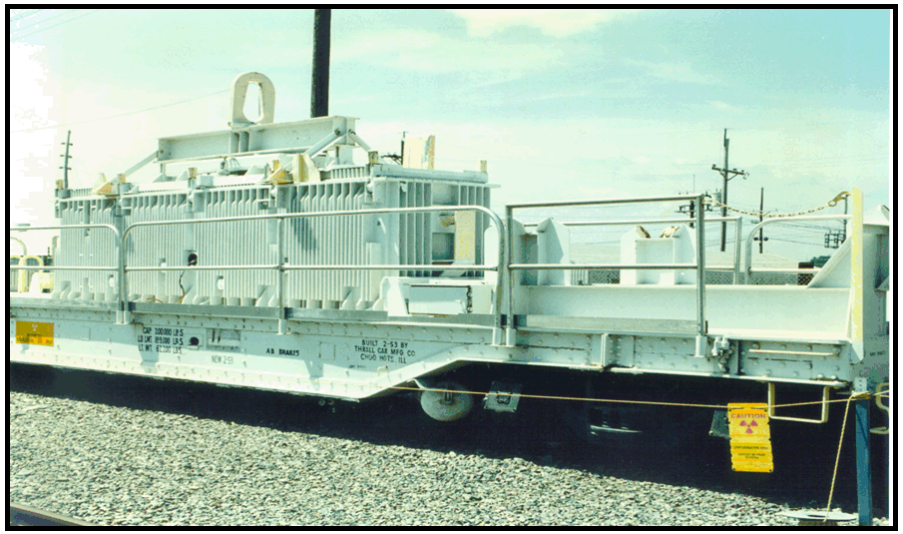
* Newly Generated TRU waste will not be shipped until after WIPP Characterization activities resume

Spent Nuclear Fuel Receipt & Storage

Spent Nuclear Fuel (SNF) Bundle stored in L- Basin



SNF being sent to H Canyon via 70 Ton Cask

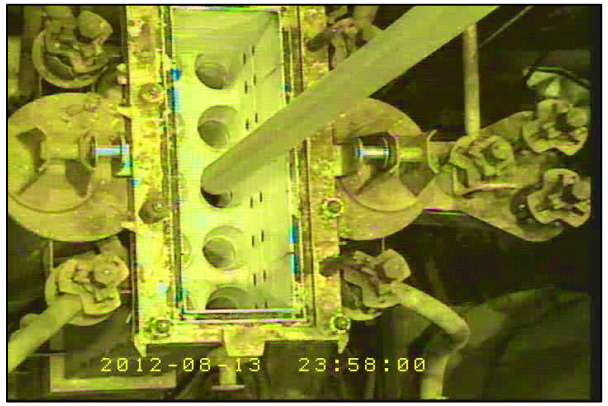


L Basin Inventory

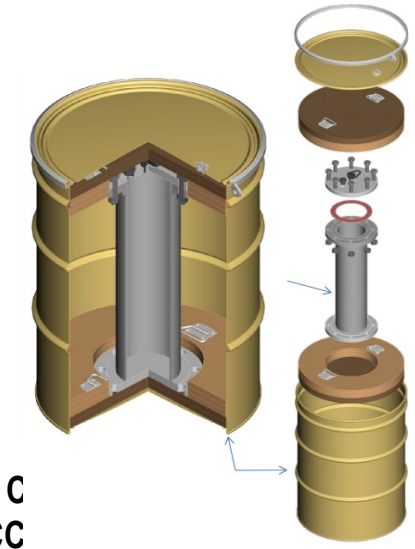
	Capacity	FY17 End-of-year	Received	Transferred to H-Canyon	FY18 End-of-year
Bundles	3,650	3,088	147	24	3,211
Cores	120	120	7	20	107

Nuclear Materials Management

Spent Nuclear Fuel (SNF) Bundle placed into H-Canyon Dissolver



Placement of Inner Convenience Can into Outer Blend Can



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Processing in H Canyon

	Target	Actual	Cumulative
Bundles	24	12	212
Cores	20	15	15

* All data is for FY2018 unless specified

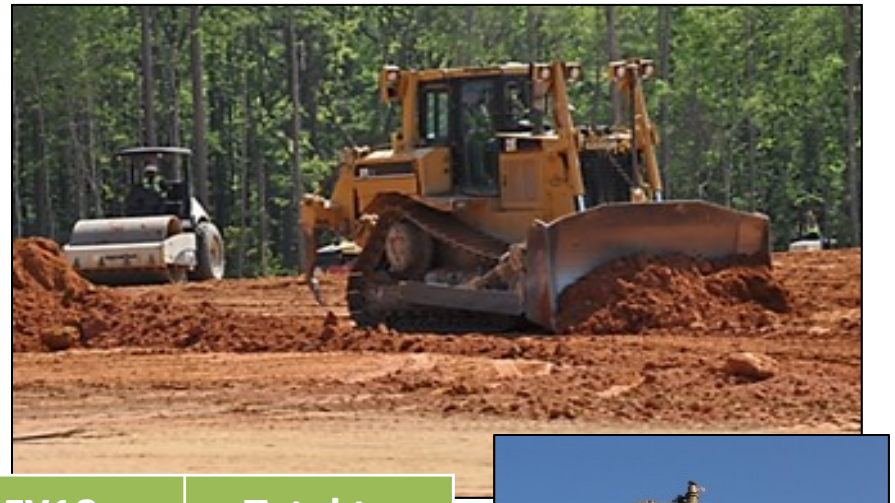
Pu Prepared for Disposition

	Target	Actual
CCO Drums Prepared	50	44
Destructive Examinations	6	6

* All data is for FY2018 unless specified

Area Completion Program Scope

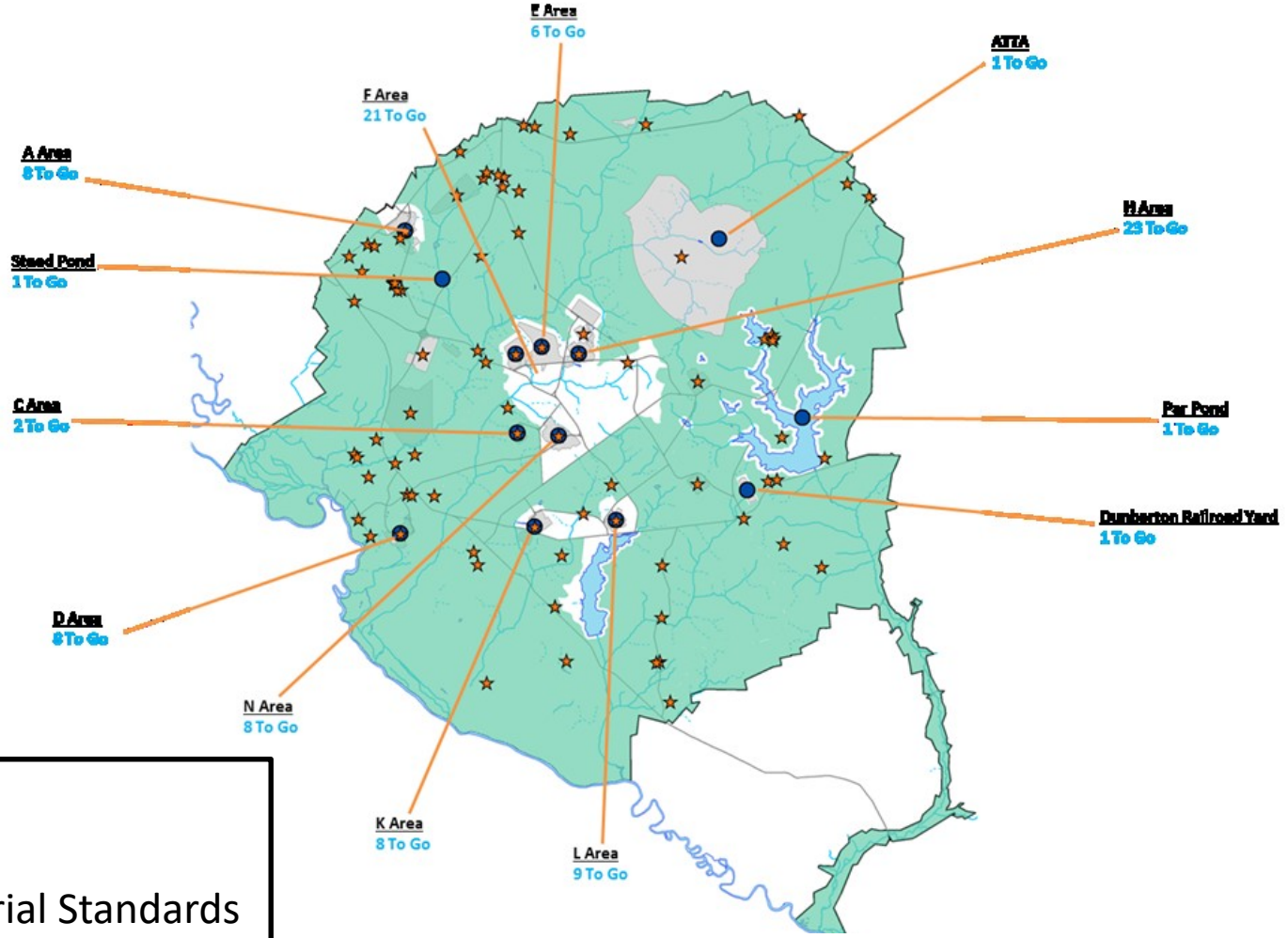
Environmental Characterization and Remediation and Facility Deactivation and Decommissioning



Performance Measure	FY18 Number	Total to Date
Number of waste sites in the investigation/remedial alternatives evaluation phase	4	
Number of waste sites in remedial design/cleanup action phase	9	
Number of operating active remediation systems	6	
Number of operating passive remediation systems	33	
Number of waste sites completed	0	408
Number of facilities decommissioned	1	292

SRS Clean-up Status

- 85% of the Site's area is cleaned to industrial standards (Green areas of map)
- Remaining contamination areas primarily within the core of the Site (Gray areas of map– Operational areas and White – Buffer areas)

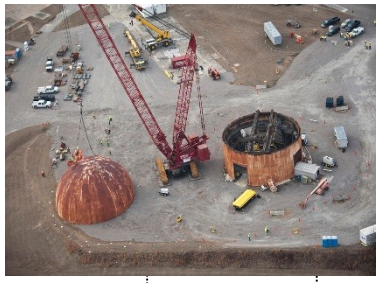


Area Complete
To Go
Cleaned to Industrial Standards
Buffer Areas
Operational

Total – 515
Completed – 408
Remaining through 2065 - 107

Area Completion Projects – 10 Years of Success

2010
Completed M Area - 2nd SRS Area



2011
Completed D&D of the Heavy Water Components Test Reactor

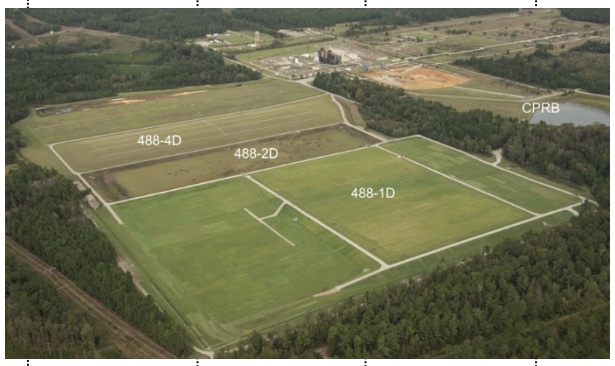
2012
Completed Grouting C Area Disassembly Basin

2011
P and R Areas Completed

1st In-situ Decommissioning

American Recovery and Reinvestment Act Initiated
2009-2012

Deactivated and Decommissioned 41 Buildings – Over 1M square feet



2018
Completed D-Area Ash Basin

2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018

Summary

- DOE-SR will continue to track & monitor performance measures for the key operational areas of EM cleanup operations.

- Suggestions from the CAB for any additional improvements are welcomed.

Acronyms

AROD	Amended Record of Decision
ARP	Actinide Removal Process
CCO	Criticality Control Overpack
D&D	Deactivation & Decommission
DWPF	Defense Waste Processing Facility
FFA	Federal Facility Agreement
HEU	Highly Enriched Uranium
LLW	Low Level Waste
MCU	Modular Caustic Side Solvent Extraction Unit
MLLW	Mixed Low level Waste
Pu	Plutonium
RCRA	Resource Conservation & Recovery Act
SNF	Spent Nuclear Fuel
SRE	Sodium Reactor Experiment
SWPF	Salt Waste Processing Facility
TRU	Transuranic Waste
WIPP	Waste Isolation Pilot Plant